

5 WHAT IS CLAIMED IS

1. A fill-up and circulating tool for inserting into <sup>NA</sup>(the upper end) of a casing string to fill fluid into and to circulate fluid from inside the casing into a wellbore for use on top drive and rotary type drilling rigs, the fill-up and circulating tool comprising:

a mandrel having a central axial bore defining a flow path therethrough;

a sleeve in engagement with <sup>said</sup>mandrel for relieving pressure through said mandrel;

an adjustable top sub assembly connected to said mandrel for variably extending <sup>NA</sup>(the length )

<sup>?</sup>(thereof) and

a sealing element disposed about said mandrel for sealing engagement with <sup>NA</sup>(the inside diameter) of the casing.

2. The fill-up and circulating tool of claim 1, wherein:

engagement of said sealing element with the inside of said casing generally fixes said mandrel in position with respect to said casing.

3. The fill-up and circulating tool of claim 2, further comprising:

a spring disposed about <sup>NA</sup>(the outer surface) of said mandrel and retained between said top sub assembly and said sleeve for biasing said sleeve to cover at least one aperture formed through said mandrel;

a spring stop disposed between said spring and said mandrel to limit the compression of said spring; and

a lower body connected to said mandrel for limiting <sup>NA</sup>(the travel) of said sleeve.

5      4.      The fill-up and circulating tool of claim 3, further comprising:  
a cementing head assembly connected atop said fill-up and circulating tool; and  
a wiper plug assembly having at least one detachable plug in functional connection with  
said fill-up and circulating tool for wiping the inside diameter of said casing.

10      5.      The fill-up and circulating tool of claim 4, wherein:  
said cementing head includes a ball drop coupling, a ball carrier assembly, and a ball port  
connecting said ball drop coupling to said ball carrier assembly.

15      6.      The fill-up and circulating tool of claim 5, wherein:  
said ball carrier assembly carries one or more (operationally balls) disposed therein.

20      7.      The fill-up and circulating tool of claim 4, wherein:  
said mandrel includes at least one screw aperture and a set screw disposable therein, said  
set screw for engaging with an upper surface of said spring stop for fixing said  
sleeve in position to cover at least one said mandrel aperture.

25      8.      The fill-up and circulating tool of claim 5, wherein:  
said mandrel includes at least one screw aperture and a set screw disposable therein, said  
set screw for engaging with an upper surface of said spring stop for fixing said  
sleeve in position to cover at least one said mandrel aperture.

9.      The fill-up and circulating tool of claim 6, wherein:

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5 said mandrel includes at least one screw aperture and a set screw disposable therein, said set screw for engaging with an upper surface of said spring stop for fixing said sleeve in position to cover at least one said mandrel aperture.

10 10. A fill-up and circulating tool for inserting into the upper end of a casing string to fill fluid into and to circulate fluid from inside the casing into a wellbore for use on a top drive and rotary type drilling rigs, the tool comprising:

a mandrel having a central axial bore defining a flow path therethrough:

a pressure relief device in fluid communication with said mandrel for relieving pressure therethrough;

15 a top sub assembly connected to the mandrel for variably extending the length thereof; and

a sealing element for sealing engagement with the inside diameter of said casing.

20 11. The fill-up and circulating tool of Claim 10, wherein:

engagement of said sealing element with the inside diameter of said casing generally fixes said mandrel in position with respect to said casing.

12. The fill-up and circulating tool of Claim 10, further comprising:

a valve for controlling the flow of fluid through the mandrel.

25 13. The fill-up and circulating tool of claim 11, further comprising:

a cementing head assembly connected atop said fill-up and circulating tool; and

a wiper plug assembly having at least one detachable plug in functional connection with

5 said fill-up and circulating tool for wiping the inside diameter of said casing.

14. The fill-up and circulating tool of claim 13, wherein:

said cementing head includes a ball drop coupling, a ball carrier assembly, and a ball port connecting said ball drop coupling to said ball carrier assembly.

10 15. The fill-up and circulating tool of claim 14, wherein:

said ball carrier assembly carries one or more (operationally balls) disposed therein.

15 16. A fill-up and circulating tool insertable into (the upper end) of a casing string to fill the casing string with fluid and to circulate fluid from inside the casing string, the tool comprising:

a mandrel having a top end and a bottom end forming an axial fluid flow pathway therethrough; said top end adapted for connecting to (the surface drilling apparatus);

20 a sealing element connected about said mandrel, said sealing element adapted for engaging the interior of said casing when inserted therein preventing fluid flow between said sealing element and said casing; and

a pressure relief apparatus in connection with said mandrel, said pressure relief apparatus providing a fluid pathway (therethrough) in fluid communication with said mandrel fluid pathway for depressuring said mandrel and said casing.

25 17. The fill-up and circulating tool of Claim 16, wherein:

said pressure relief apparatus forms at least one lateral aperture for relieving back pressure

5 from said casing when desired.

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18. The fill-up and circulating tool of Claim 17, further comprising:  
a blocking member preventing fluid flow through said pressure release apparatus when  
pressure within said mandrel pathway is greater than pressure in said casing string,  
10 and allowing backflow when pressure in said casing is greater than in said pathway.

19. The fill-up and circulating tool of Claim 18, wherein:  
said blocking member includes a ball, said ball biased and seated from the interior of said  
pressure relief apparatus against said lateral aperture.  
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20. The fill-up and circulating tool of Claim 18, wherein:  
said blocking member is a deflectable member disposed within said pressure relief housing  
adjacent said lateral aperture.

20 21. The fill-up and circulating tool of claim 16, further comprising:  
a cementing head assembly connected atop said fill-up and circulating tool; and  
a wiper plug assembly having at least one detachable plug in functional connection with  
said fill-up and circulating tool for wiping the inside diameter of said casing.

25 22. The fill-up and circulating tool of claim 21, wherein:  
said cementing assembly carries one or more (operationally balls) disposed therein.

Sub A3 5 23. The fill-up and circulating tool of claim 18, further comprising:  
a cementing head assembly connected atop said fill-up and circulating tool; and  
a wiper plug assembly having at least one detachable plug in functional connection with  
said fill-up and circulating tool for wiping the inside diameter of said casing.

10 24. The fill-up and circulating tool of claim 18, wherein:  
(said cementing assembly<sup>N A</sup>) carries one or more (operationally balls<sup>?</sup>) disposed therein.

15 25. The fill-up and circulating tool of claim 19, further comprising:  
a cementing head assembly connected atop said fill-up and circulating tool; and  
a wiper plug assembly having at least one detachable plug in functional connection with  
said fill-up and circulating tool for wiping the inside diameter of said casing.

20 26. The fill-up and circulating tool of claim 25, wherein:  
said cementing assembly carries one or more (operationally balls<sup>1 2</sup>) disposed therein.

25 27. The fill-up and circulating tool of claim 20, further comprising:  
a cementing head assembly connected atop said fill-up and circulating tool; and  
a wiper plug assembly having at least one detachable plug in functional connection with  
said fill-up and circulating tool for wiping the inside diameter of said casing.

28. The fill-up and circulating tool of claim 27, wherein:  
said cementing assembly carries one or more (operationally balls<sup>?</sup>) disposed therein.

29 30.

A fill-up and circulating tool insertable into <sup>NA</sup>(the upper end) of a casing string to fill the casing string with fluid and to circulate fluid from inside the casing string, the tool comprising:

a mandrel having a top end and a bottom end forming an axial fluid flow pathway therethrough; said top end adapted for connecting to <sup>NA</sup>(the surface drilling apparatus);

a sealing element connected about said mandrel, said sealing element adapted for engaging the interior of said casing when inserted therein preventing fluid flow between said sealing element and said casing;

a pressure relief apparatus in connection with said mandrel, said pressure relief apparatus providing a fluid pathway therethrough in fluid communication with said mandrel fluid pathway for depressuring said mandrel and said casing; and

a one-way valve member in fluid communication with said mandrel fluid pathway allowing fluid to pass into said casing and substantially preventing back flow therethrough.